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ABSTRACT

This paper discusses the application of the Montessori method as an intervention for children at risk for learning disabilities. A review of the literature provides background information about the philosophy and history of Montessori methods, and considerations relevant to at-risk children. Characteristics of the Montessori method, particularly in relation to: (1) a prepared environment; (2) the role of the teacher; (3) presentations made by the teacher; (4) observations on which those presentations are based; and (5) children's sensitive periods for learning certain skills, are discussed. The Montessori curriculum and its emphasis on self-initiated activity is described in the context of the areas of practical life, sensorial, language, and mathematics. It is concluded that the method is appropriate for teaching at-risk children if curriculum is successfully individualized for each child's learning needs. Suggestions are made for implementing the Montessori curriculum for at-risk children. This program emphasizes the importance of teachers knowing and understanding each child's learning needs and abilities and encouraging each child to work at his own pace. It is suggested that for success with at-risk children, teachers must be trained in the Montessori method, and that parents should be involved in the program. Appendixes include a list of Montessori materials for use with at-risk children, and a list of Montessori schools which offer courses, workshops, and lectures for teachers of at-risk children. Contains 49 references and 4 figures. (Author/RH)

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# Successful Applications of Montessori Methods with Children at Risk for Learning Disabilities

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## MONTESSORI APPLIED TO CHILDREN AT HIGH RISK
## ABSTRACT

The critical aspects of the Montessori philosophy are respect for the child, individualization of the program to that child, and the fostering of independence. With her background of research Dr. Montessori devised a multi-sensory developmental method and designed materials which isolates each quality of the concept the teacher presents to the child.

Through the presentation of these materials the teacher can observe the concept and skill development level of the child. From these observations the teacher can ascertain areas of strength and weakness and match the next presentation to the child's level of development. Through small sequential steps she can help the child ameliorate weaknesses and/or guide him to maximize his strengths. The purpose of these presentations, usually initiated by the child, is to enhance cognitive growth In a process which interrelates the physical, social and emotional development of the child.

The curriculum contains four major content areas: Practical Life, Sensorial, Oral and Written Language, and Mathematics. In addition Geography, History, Science, Art, Music, Literature, and Motor Skills are included. In all of these areas the Montessori presentations are structured from simple to complex, concrete to abstract, and percept to concept. Vocabulary and language usage are integral to each presentation.

The procedures introduced to the child through these presentations and the structure of the classroom are seen to enhance attention, increase self-discipline and self-direction, order, organization and a work cycle. High risk children are seen to benefit from the structure, the procedures and the curriculum. Applications of this method to these children require more teacher selection of materials and direct teaching particularly of language and math symbols and their manipulations.

This early childhood intervention is not seen as a cure, but an opportunity to provide an individualized program which allows the high risk child a successful experience at the pre-school level

including a strong conceptual preparation for academic learning while maintaining a healthy self-concept.

# SUCCESSFUL APPLICATIONS OF MONTESSORI METHODS WITH CHILDREN AT RISK FOR LEARNING DISABILITIES

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Maria Montessori is today regarded as a major innovator in education during the early part of this century.

> There is an obvious similarity of Montessori's written philosophy and its relationship to the modern concepts of input in informational processing. She recognized that the child's perceptual and intellectual developments were part of the total growth pattern of the individual and that all work together to shape each person into his pattern of uniqueness (Pickering, 1978, p. 144).

Her ideas and methods of teaching young children academics as well as daily living skills are recognized as common sense to some and creative genius to others.

> Psychologists are, at long last, becoming aware of the remarkable contributions that Maria Montessori made to our understanding of child training and the broader problems of child development. Her contributions are of signal importance in their own right and their

> implications for developmental theory have been too long ignored (Gardner, 1968, p. 78).

Some consider Maria Montessori as having done the first work with the population we now refer to as learning disabled. "Because Montessori began her work first with retarded children and then with children from the most deprived of backgrounds, she could not take any previous knowledge for granted. A careful path was always laid from the under-developed to the developed, from the concrete to the abstract. This is, of course, important for all children, who begin their learning as infants with undeveloped brains. But with these children, where many steps usually taken for granted have been missed in earlier years, it can make the difference between the success and failure of a human life (Lillard, 1973, p. 143-144).

In 1969, Dr. Sylvia Richardson suggested to me that the Montessori Method provides a program that would be optimal in educating children who are at risk for learning differences. It provides a hierarchy of skills and allows diagnostic teaching with which the teacher may help each child match his work to his developmental level. It offers a model in which the teacher can present materials to a child one to one, as Montessori frequently mentioned was crucial with some children. These children who require one to one teaching are usually the learning different (Orton, 1937).

The child who is at risk for learning differences or disabilities has a combination of various patterns of deficits in attention, order and organization, gross and fine motor skills, perceptual confusions causing faulty concept formation, may evidence weaknesses in oral language development, has difficulty learning the written symbols and patterns of language, may exhibit problems with the abstractions of math, and social skill immaturity (Shedd, 1967; Brutten, Richardson, & Mangel, 1973; Critchley, 1964; Waites, 1990).

From 1970 to the present, the specific procedures in which Montessori can be applied to at risk children have been studied and are described in this paper. Data collection throughout the more than 20 years of applying Montessori to students at risk indicates that these students scored effectively on standardized measures appropriate for their age (Pickering, 1971). Observation gave a view of an infinitely more important result. These at risk children enjoyed school and learning. They and their classmates accepted their differences in their weak areas. Their self-concept of themselves as a learner and a person remained intact.

Since the reader may not be familiar with the Montessori method a short overview is presented first and then specific information on the work with at risk children is described. Dr. Maria Montessori, the first woman physician in Italy, worked in the psychiatric department of the University of Rome and became convinced that the "mentally deficient" children she saw there could be

helped by special education. Traveling to London and Paris she studied the work of Jean Itard and Edouard Seguin, two pioneers in the field of sensory education.

In 1898 Montessori became the Directress of the State Orthophrenic School where she investigated many of her ideas about education. After two years of work, some of the "retarded" children were able to pass exams and enter normal school.

Montessori wondered what her procedures would do to help children whose intellectual functioning was average and above. In 1907 she finally was given the chance to apply her educational procedures to a population of average children. She wanted to observe the children interacting with the sensorial materials that she had begun to develop. From these observations she expanded her ideas on the critical components of a preschool program.

Montessori noted in her writings the differences she discovered between these average children and the mentally deficient children of her earlier study. One of the marked differences was that the average children did not require the one to one relationship with the teacher in their exploration of the sensorial materials. On the other hand, the children with learning difficulties needed more individual attention. The average children seemed drawn to certain works and practiced these at length as if responding to an inner need to master the task. Average children developed a cycle of work in which they chose one material after another, varying their type and level of difficulty.

The children who were considered deficient needed closer direction by the teacher, avoided works they sensed they could not do, and did not develop a cycle of independent work. The teacher had to help train such children in these work habits. When Montessori saw these traits develop in the child with deficiencies she characterized this shift as "normalization." She saw the development of an individual work cycle as normal and the inability to gain these skills as indicating a deficiency in development.

Montessori advocated a "prepared environment" and materials appropriate to the size of the children. The activities for investigating new ideas are placed on trays with the precise items needed to investigate a concept. The trays are on open shelves so that the child can easily see the works and make choices of the work he wishes to do. To devise the rich "prepared environment" Montessori delineated areas of learning, invented materials to present each percept/concept, and wrote detailed presentations of how each material could be demonstrated to the child (Montessori, 1949, 1966). Each presentation proceeds from simple to complex and from the use of concrete materials to abstraction.

The classroom teacher presents these activities and invites the child to imitate the task. Montessori recognized that young children learn by imitation. She uses what she called the "absorbent mind" in allowing the children to interact with the environment the educator prepares (Montessori, 1914, 1966).

Each presentation is made slowly, carefully engaging the child's attention and enhancing awareness of detail. The child in his practice with the activity increases his eye-hand coordination, fine motor skills, sense of order, organization, ability to sequence, in short, the skills necessary to go about a learning task. The teacher offers the child the opportunity to perfect his skills, to learn how to learn. The teacher presents the concepts and guides as much or as little as needed.

The child is to choose his own work, as Montessori believed that between birth and age five the child passed through many "sensitive periods" for learning certain skills (Montessori, 1949, 1967). She recognized that each child's development proceeded in a different way and at a different rate, therefore she let the child lead in the choice of activities as much as possible, trusting that the child's sensitive periods are guiding him to choose the work for which he is ready. The teacher "following the child" in these basic sensitive periods to guide as much as she is actually needed.

For this system of "match" to work, a clear structure of classroom procedure and an observant teacher is needed. In the Montessori system the teacher presents the "activities" on the shelves to children individually or in small groups. The children may choose any activity to explore. The teacher's presentations are based on the observations that she does of each child's work choices and the growth and development she notes during these observations. Often the child asks for the presentation of the activity.

She follows the child's lead but she has the knowledge of the sensitive periods and the hierarchy of skills through which the child is working. If the child chooses materials at a level that is too difficult and frustrating the teacher helps him move to a level of success. The student then begins his forward progression again. If he is choosing at too low a level or becoming bored by only repeating skills he has well established, the teacher's job is to stimulate and challenge the child in her next presentations.

## THE MONTESSORI CURRICULUM AND THE AT RISK CHILD

A child's work, Montessori (1966) wrote, " . . . is to create the man he will become. An adult works to perfect the environment but a child works to perfect himself." (p. 92) A major tenet of the Montessori educational method is respect for the child who is engaging in the process of creating the person he will become.

The Montessori Curriculum encompasses nine basic disciplines. The four major areas of concentration are Practical Life, Sensorial, Mathematics, and Language. The Social Studies (Geography and History) and Physical Sciences complement the four basic areas. Enriching these areas are art, music, and perceptual motor skills.

The Practical Life curricula includes skills that help the young child master care of self and environment. Incorporated in these tasks

are motor development and interpersonal relationship skills. These apparently simply tasks help enhance attention.

The Practical Life exercises have several primary aims: independence, awareness of the environment, concentration, sense of order and task completion. Through concentration and order the child is being prepared for future academic work. The contact with a real environment results in an orientation toward reality. Tasks such as scrubbing a table are meant to provide the gross motor skills that must precede the more delicate manipulations and the precise coordination required for more advanced activities such as reading and writing.

Zaporozhets, a Russian psychologist, who worked on functions of orientation (attention) proposed that attention can be modified by motor mediation (motor training). This premise is shown to be true in observing children in a Montessori environment, particularly with the Practical Life materials. As the child, through the teacher's careful presentations begins to attend to detail, his eye-hand coordination improves and his motor movements slow as he carefully attempts to make each required movement for success in the task. As these motor skills are refined, the child's attention/concentration is required and therefore he becomes more focused. For all children this focus on a work task and lengthened attention span are important, but for the at risk child it is critical.

> We were impressed with the variety of ways in which the Montessori method develops effective inhibition of

> irrelevant motoric activity, while at the same time developing both focal attention and concentration upon sequences...involved in complex tasks. This operation interested us particularly because we have long been impressed with the notion that specific forms of selective attention...are among the most valuable and uniquely human of our evolutionary gifts (Gardner, 1947, p. 78).

Through these initial seemingly simple work tasks, the child learns to set up and organize a work environment; in other words he learns how to go about a learning task. These are the very abilities that usually are reported as deficient in the at risk child and always noted as a weakness of learning disabled students.

The Sensorial Curricula helps a child learn to classify and categorize his world through his five senses. This curriculum is unique in education in my experience. Most programs take for granted that the abilities to perceive differences and discriminate and classify is developing during the preschool years. Only in the Montessori method have I found a concern with this early sensory perceptual development and a curriculum for checking that development and modifying areas of deficiency.

This curriculum provides a child with investigation of visual, auditory, tactile, kinesthetic, gustatory and olfactory identification and discrimination. The visual sense is related to the perception of color (red, blue), form (circle, square), and dimension (long, short). The tactile sense discriminates the feel of rough, smooth, hot, cold, light, heavy. The auditory sense is the perceiving and discrimination of

sounds. Through the Montessori bells, the child learns to distinguish soft from loud and similar sounds. The gustatory and olfactory senses are developed through tasting and smelling experiences. All of these concepts are explored by the child in colorful and interesting self-corrective materials.

In the Sensorial materials each quality, such as size, is isolated. Gradations of dimensions are at the level of "just noticeable difference." The teacher presents contrast and gradation to the child. The child in working with the materials experiences ever closer discriminations of sensory information. Attention to detail is further enhanced. The importance of the Sensorial area is to refine and train the child's senses, allowing the child to establish an order and to clarify what he senses. These exercises teach the child to become a precise observer, to contrast and graduate, and to generalize, which leads to the abstraction of ideas, and from there to logical thinking. As Montessori (1967) explains:

> Our senses are the tools for the perception of our surroundings. The environment reaches the individual through the use of the senses. (p. 6)

Seguin (1907) discussed the importance of the senses. He described the senses as receptors of information which the brain interprets as sensorial information. Seguin saw the nerves transmitting energy to the muscles that control the movement and

finally through movement, information is translated into learning which is then practiced and refined. Seguin found that perceptions are acquired in our minds through our senses not by our senses.

Piaget (1963) also placed a strong emphasis on the value of sensorimotor training in the child's cognitive development.

> Sensorimotor intelligence lies at the source of thought, and continues to affect it throughout life through perceptions and practical sets...The role of perception in the most highly developed thought cannot be neglected, as it is by some writers. (p. 119)

The materials also serve to expand the child's vocabulary. Large, larger, largest are taught in a concrete way by manipulating and feeling the differences. Being more sensitive to the impressions of the environment, the child is able to distinguish, categorize, and relate new information to what he already knows. This is the beginning of his cognitive development.

Since the perceptual interpretations of this at risk child may be faulty or variable, the use of this curriculum is important in providing experiences that ameliorate his misperceptions. Without accurate discrimination information he will be handicapped in categorizing and classifying his world. With increased perceptual discrimination, he may move to these levels and be better prepared to move toward reasoning skills.

In a Montessori environment many activities prepare a child for reading and writing. The language curriculum consists of oral language, prewriting and prereading activities, such as word building, which lead to reading and writing. A child learns to read through writing.

Oral language precedes written language. Correct speech and pronunciation are essential tools for reading. During a child's first year of life, as he proceeds through crying, cooing, babbling, echoing, and eventually the first production of meaningful words, he is developing an "inner language," an understanding vocabulary, that he is not yet ready to express. A child spends the second year of his life bringing this "inner language" to a stage of "expressive language."

Oral Language in the Montessori classroom is encouraged through the verbal labeling of the materials used in each activity and discussion of the attributes and the functions of this material and in the narratives between the teacher and the child, as well as between the child and other children. Presentations are made silently to allow a child the opportunity to process the perceptual information, then labels are introduced through the three period lesson; This is a _____. Show me a _____. What is this?

Preparation for writing begins with the metal insets; a set of metal frames with removable centers in various geometric shapes. In tracing the shape and eventually shading the internal part of the design, the child practices all the essential movements he will use in writing.

The first step a child takes toward reading is tracing the sandpaper letters. As he traces the letter, the child repeats the name and sound of the letter. In this way the child feels the shape with his finger, feels the shape with his arm muscles, sees the letter, and hears the sound (Montessori, 1914, 1966). This multi-sensory procedure utilized by Montessori for young children is the same type of presentation Orton and Gillingham recommended for children with specific language/learning disabilities.

> ...our technique is to teach the sounds of the letters and then build these letter sounds into words, like bricks into a wall. ...our technique is based upon the close association of visual, auditory and kinesthetic elements forming what is called the language triangle .
> Each new phonogram is taught by...processes which involve associations between the visual, auditory and kinesthetic records on the brain. (Gillingham & Stillman, 1960, p. 40)

When a child begins to recognize sounds, he begins identifying them in words. Many matching activities are created for the child to practice this essential skill. Through the tactile kinesthetic feedback in using the sandpaper letters, the child begins to practice writing the symbols. The child moves through writing to reading.

When a child begins blending sounds he is ready for word building with the movable alphabet. The movable alphabet is a set of individual letters that the child can manipulate to spell word patterns. The teacher prepares boxes of cards that increases in difficulty and

uses them to control the word pattern complexity. Using the cards, children begin to understand decoding skills. The picture placed next to the word provides a graphic representation of the word. These pictures assist the child in attaching meaning to the word and set a foundation for comprehension. As a child's skills in word building increase he is offered reading booklets, the opportunity to copy words and then sentences. He proceeds at his pace to more complex levels of reading, spelling, and writing. Sight words are introduced in a variety of materials. This procedure can control for complexity of word patterns in the same way as the Orton-Gillingham procedures introduce written language. In Montessori these beginning presentations are done through three dimensional materials for the young child rather than manuals or decks that are appropriate after the pre-school level.

Grammar is unique system in which each part of speech is represented by a geometric symbol. With these symbols placed under the words of a sentence, sentence patterns can be represented graphically. The child can see the pattern of the sentence.

The at risk child is assisted by these procedures in many ways. Repeated exposure to objects and ideas that are precisely labeled and consistently used by his teacher and reinforced by the child in the environment help build oral language. The Sandpaper Letters allow the at risk child to learn through four senses instead of the usual two (visual-auditory) which may be inefficient in the processing task. The

movable alphabet allows a child who is not yet "good at writing" to practice the patterns of the language with manipulative materials. Most importantly these patterns can be controlled for him so that the number and diversity of patterns does not overwhelm this child with visual/auditory processing deficiencies. All work proceeds at his rate. Cursive writing with its flow, left to right directionality, and consistent spacing is helpful to the at risk child.

The sensorial materials are a prerequisite to mathematics. The child learns to discriminate greater than and less than through varying size dimensions in the sensorial curricula before beginning to deal with the concept at a more abstract level of relative quantities that are represented by numbers. The mathematics curriculum includes a hierarchical study of numeration, linear counting, skip counting, place value, arithmetical operations, memorizations of facts, powers of numbers, materials leading to abstraction, and other base systems. Each concept is presented to the student with the carefully designed manipulative materials. These materials introduce to the child quantities, mathematical patterns and relationships.

For all students the use of this material demonstrates patterns and functions in mathematics in a three dimensional model. The mathematically gifted may visualize this model abstractly, but most students benefit from these procedures by understanding math relationships more clearly. This is certainly true for the at risk child who often has many weaknesses in abstract reasoning.

One of the most significant benefits observed in at risk children interacting with self-corrective materials is that they learn that mistakes are not "bad," but are the way we learn. This concept is verbalized by the teacher as well. "How do you think you can do it?" "Try it." "It's okay if it's wrong, then you can try it another way." "If we can't figure it out today, maybe we can tomorrow."

This experience seems to minimize the at risk child's usual reaction to something he tries and cannot do. Feelings of frustration, anger, a tendency to give up or rush through a task, or cheat, or avoid a difficult task need not occur when the child is taught that patience and perseverance are often necessary for learning and that the process is as or more important that the finished product. The important thing is what we learn, not that we performed perfectly the first time or finished first. The group learns to respect another's learning experience. They learn that it is his turn, we will wait for him to think, we will allow him to do it wrong and not rush him or laugh at him. The teacher absolutely insists on this respect for each human being in her class and is the model for this behavior.

General observation of at risk children in a Montessori program indicates that these children need the teacher present in their learning environment for greater time periods, direct assistance on attention/focus/and concentration, structure for behavior, guidance in selecting and performing tasks, specific and direct oral language development, direct teaching of written language and/or math



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symbols, pre-writing and writing practice with a multi-sensorial technique, and language presentations modified with the techniques or programs for children with specific reading disabilities.

## SUMMARY AND CONCLUSIONS

The Montessori Method enhances the development of attention, order and organization, gross and fine motor skills, visual and auditory perception, oral language development, the academic skills of written language, and mathematics, and personality growth. It accomplishes this enhancement through a hierarchical curriculum with which a trained and skillful teacher may, by observation, match to the child's developmental level. The program enables the child to feel successful in school and therefore attain a concept of himself as a competent person. The method provides this enhancement through:

* a classroom structure which provides a method for individualization of instruction through the child's interaction with the didactic materials proceeding at his own rate for mastery

* specific procedures/techniques for training attention

* a classroom structure, clear in limits and privileges, which assists the child with faulty inhibition control to develop those skills

* an emphasis on work organization which gives a child a model for learning how to set up and go about work tasks, the result of which can be a lifelong habit of investigation

* manipulative materials which provide the child with multi- sensory perceptions which help concretize abstract concepts

* specific techniques for increasing gross motor skill development, eye-hand coordination and fine motor skill facility

* A concentration on the specific labels for people, objects, and ideas and their attributes and functions that foster oral language development.

* Presentations of academics in small sequential steps with scientifically researched materials to further skill development in language, math, geography, history, physical and biological sciences, art and music.

* An environment of encouragement to try, a deemphasis of failure, which encourages the child's desire independent, an emphasis on respecting the teacher and classmates that fosters consideration for others.

An important observation made during these studies is that the major motivation for learning is success. Through the Montessori method, minute levels of difficulty in a task can be matched to the child's ability level. Therefore, these presentations can be structured for success. The child can feel some positive feedback. Frustrate this already confused child and in a short time secondary emotional problems such as hostility, bullying, bossiness, and/or withdrawal begin to appear.

J. McVicker Hunter (1968) has written that Montessori has come the closest to solving the problem of "match" in education. He explains the "match" concept as placing the level of presentation to the

child at the child's developmental and skill level for optimal learning and success. This problem of "match" is important in teaching all children but is critical to teaching the at risk child. This match provides success in learning which allows a child to develop a healthy self-concept. Effective academic skills and a positive self-concept can make the difference in the quality of a human life.

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## Contrast of the Development of Average and At Risk child Related to the Montessori Methods which Enhance Learning for the At Risk Child

| Development of Average Child | Development of At Risk Child | Montessori Methods that Enhance Learning for the At Risk Child |
|---|---|---|
| ATTENTION<br>Inhibition control begins to develop at 2 1/2 to 3 years of age. Focuses on activity presentation and concentrates. Works with activities for periods of 10 minutes or longer. | ATTENTION<br>Attention deficits may be present. Behavior often noted as hyperactive, hypoactive, or distractible. Inhibition control does not develop in a normal manner, therefore focus and concentration are faulty. | ATTENTION<br>**Prepared Environment**: organization of materials, room areas analyzed for use by children.<br>**Classroom Atmosphere**: ordered calm.<br>**Order in Presentation**: assists focus, child waits for closure.<br>**Silence game**: teaches inner calm, concentration, focus.<br>**Classroom Structure**: clear limits/freedoms, teacher accepts role to help children develop inhibition techniques, central focus. |
| COORDINATION<br>GROSS MOTOR<br>Walks, hops, runs, jumps, skips, throws and catches ball by approximately 5 years of age. | COORDINATION<br>GROSS MOTOR<br>Sometimes observed as clumsy in body movements in classroom. Often below normal limits when observed on specific items (alternating feet in walking up steps, skipping, learning to jump rope). | CO-ORDINATION<br>GROSS MOTOR<br>**Manipulation of Materials:** carrying/using multi-sensory materials of various sizes and weights.<br>**"On the Line" procedures**: moving to rhythms, marching, hopping, skipping to music. Indirect/direct instruction in basic gross motor movements through a Perceptual Motor Skills program. |
| FINE MOTOR<br>Cuts on a line, cuts out shapes, holds pencil, maintains line, pressure, makes corners by 5 years of age. | FINE MOTOR<br>Difficulty maintaining pattern of cutting motion results in jerky motion, jagged cutting. Holds pencil in awkward fashion, difficulty maintaining a line, pressure, round corners. | FINE MOTOR<br>**Eye-Hand Co-ordination:** manipulation of materials in all areas of curriculum.<br>**Hand Co-ordination:** preparation of the hand for writing use of thumb, index and middle fingers working together for grasp and release. Particular training in the pre-writing activity of metal insets. |

| Development of Average Child | Development of At Risk Child | Montessori Methods that Enhance Learning for the At Risk Child |
|---|---|---|
| **ORGANIZATION**<br>Order and sequence appear to be learned by imitation. | **ORGANIZATION**<br>Difficulty noted in ordering work tasks and working in a sequential way. | **ORGANIZATION**<br>All activities in all curriculum areas have a specific order and sequence. The teacher demonstrates, the child imitates. The teacher helps the child refine his work habits from haphazard trial and error attempts to procedures which help the child gain the skills of analysis necessary for effective organization of work. |
| **PERCEPTION**<br>Matches, discriminates sensory information. Perceives patterns in shape, color, numbers. | **PERCEPTION**<br>Matching is usually within normal limits. Difficulty with discrimination of sensory information noted. Discrimination/memory difficulties in math or letter symbols frequently seen. Association of symbol to name often a problem. | **PERCEPTION**<br>Through the Sensorial curriculum the teacher can assess the child's ability to perceive, discriminate and graduate visual, auditory, tactile, olfactory and gustatory information. These sensorial discriminations and the associated language concepts are significant in the progression to higher cognitive functions, such as categorizing, generalizing, and the beginning of reasoning. All areas of the curriculum utilize VAKT to assist the child in the perceptual discrimination and memory required in language and math. |
| **WORK CHOICES**<br>Chooses variety of work, usually proceeding to more difficult concepts. | **WORK CHOICES**<br>Chooses simple work that has been mastered, avoids work that is perceived as "harder." Avoids letters and/or numbers, avoids written work, needs teacher guidance for choices. | **WORK CHOICES**<br>Procedures allow the teacher to guide the child in learning to make his choice of work. She may allow choice, limit choices, or make choices for the child until he can do this task independently. |

| Development of Average Child | Development of At Risk Child | Montessori Methods that Enhance Learning for the At Risk Child |
|---|---|---|
| **HABITS**<br>Chooses work, uses procedure with purpose, replaces the work on the shelf. | **HABITS**<br>Avoids work, often insecure due to lack of successful learning experiences. When chooses, often replaces without using or leaves work and wanders the room. | **HABITS**<br>The structure of the classroom and the procedures for working with the activities fosters organized work habits. |
| **CYCLE**<br>Chooses one activity after another varying the difficulty of choices. | **CYCLE**<br>Does not establish a true cycle without teacher support. | **CYCLE**<br>The teacher can enhance the work cycle by teaching the child to make choices, how to set up his work, areas appropriate for work, completion of activities and return of the activity to its location. |
| **LANGUAGE**<br>**ORAL**<br>Has a vocabulary of approximately 2,500 to 5,000 words and usage of this vocabulary or basic communication with appropriate sentence structure. | **LANGUAGE**<br>**ORAL**<br>Vocabulary deficiencies seen in labeling, sentence formation and usage in running speech. Often seen as a quiet child, child who is confused by simple directions. Child who often says "you know." A portion of the at risk population is normal in vocabulary development. High incidence of articulation and rhythmical difference. | **LANGUAGE**<br>**ORAL**<br>All lessons made silently to allow child to process the perceptual information being demonstrated and then the labels, the language concepts, are associated. Specific vocabulary covered. Curriculum for the at risk child must be extended from vocabulary development to effective oral communication. |

**Development of Average Child**

**WRITTEN LANGUAGE**
If presented, has mastered most of the letters and the basic sounds of the language. Usually can blend these sounds and decode. Often is beginning to read by 5 years of age.



**Development of At Risk Child**

**WRITTEN LANGUAGE**
Inconsistency in performance seen in learning letter symbols and sounds. Variable performance with all written symbols activities, difficulty in perceiving the patterns of words.

**Montessori Methods that Enhance Learning for the At Risk Child**

**WRITTEN LANGUAGE**
Prerequisites: Sensorial Curriculum/Pre-Writing Activities/ Oral Language Development in progress.

Presentations begin with the multi-sensory Sandpaper Letters with which the child can receive visual, auditory, kinesthetic and tactile information to increase the sound/symbol correspondence. Several activities presented after the Sandpaper Letters give repeated practice through varied materials in sound/symbol association. These proceed from concrete to abstract.
The Movable Alphabet provides the child with 3 dimensional letters which the child may manipulate to practice Word Building by using his sound/symbol knowledge. The activity gives the child a beginning reading activity at the word level before presenting the challenge of reading in a book. The activity reinforces the left to right progression of language. Reading, Spelling and Writing proceed at the child's rate through a hierarchy of simple to complex word patterns. The child moves from word building to sentence building to reading/writing stories and books, to grammar analysis

| Development of Average Child | Development of At Risk Child | Montessori Methods that Enhance Learning for the At Risk Child |
|---|---|---|
| **MATH**<br>Gains number to quantity concepts, math symbols, math concepts and beginning computation by 5. | **MATH**<br>Spotty performance on # to quantity concepts, longer work time for mastery, erratic performance on symbol/numeral association, math concepts often superior to computation, difficulty with immediate recall of facts, difficulty with patterns as seen in odd/even, writing to 100, skip counting, difficulty with 1:1 correspondence. | **MATH**<br>Pre-requisites: Sensorial Curriculum through Red Rods/Pre-Writing Activities begun. Number to quantity activities presented to establish quantity/symbol relationship. Materials are manipulative and multi-sensory. Materials move from concrete to abstract. Three Period Lesson used to attach language to quantity. Number to quantity practiced out of sequence and in sequence. Number to quantity activities include Number Rods (1-10), Spindle Box (concept of 0), Tile Game (1-10 odd/even). Teens Board and Tens Board allow for language of teen numbers and the tens number to be introduced by number to quantity. Introduction of the decimal system (language of number to quantity) provide child repetitions of building various quantities from 1-9,000 with the golden beads and matching the numerals. Addition, multiplication, subtraction, and division introduced with golden beads. Writing of numerals introduced with Sandpaper numerals. Skip counting introduced with the manipulative bead chains. Functions practiced with additional multi-sensory materials addition strip board, subtraction strip board, multiplication board, division board. |
| **CO-OPERATIVE BEHAVIORS**<br>Usually has gained inhibition control by 5 which enables him to cooperate with a teacher and peers in a learning environment. Given encouragement, enjoys the acceptance of responsibility and independence. Follows a model of consideration of others. | **CO-OPERATIVE BEHAVIORS**<br>Has not always experienced the neurological maturation which allows inhibition control. Can be seen as stubborn, willful, immature, silly or withdrawn. Lacking self control he has not developed a cooperative spirit with adults or other children. Needs direct instruction in inhibition, how to accept responsibility, how to persevere, how to use independence, how to act in a considerate manner. | **CO-OPERATIVE BEHAVIOR**<br>The experienced teacher with specific training in teaching at risk students accepts as part of her responsibility the guidance and instruction of appropriate behaviors and social skills. She will teach the child through specific techniques inhibition of impulsive behavior, increased self-control, the acceptance of responsibility, perseverance, independence and consideration for others |

**For an expanded explanation of each area of enhancement for the at risk student contact the author: Joyce S. Pickering, Executive Director, The Shelton School; 5002 West Lovers Lane, Dallas, Texas 75209. (214) 352-1772.**

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